

CLAIMS

What is claimed is:

1. A method for testing a spa system which includes a spa tub for holding water, an electronic controller system which controls the spa system functions, a plurality of controlled devices controlled by the controller system including a pump for recirculating water in the tub, and a heater for heating water, the method comprising:

exercising the plurality of controlled devices during a testing regime;
monitoring an electrical current drawn by the spa system;
determining whether the electrical current drawn by the spa system during the testing regime is consistent with an expected current profile.

2. The method of Claim 1, further comprising:

filling the spa tub with water before exercising the plurality of controlled devices.

3. The method of Claim 1, wherein said exercising the plurality of controlled devices comprises:

conducting a pump cycle comprising turning the pump on, running the pump for a time, and turning the pump off.

4. The method of Claim 1, wherein said exercising the plurality of controlled devices comprises:

turning the heater on, and subsequently turning the heater off.

5. The method of Claim 1, wherein said exercising the plurality of controlled devices further comprises:

turning a blower fan on, and subsequently turning the fan off.

6. The method of Claim 1, wherein said exercising the plurality of controlled devices further comprises turning a spa light on, and subsequently turning the spa light off.

7. The method of Claim 1, wherein said exercising the plurality of controlled devices comprises:

 sending a command or set of commands from a test station to the electronic controller of the spa system to turn on and turn off one or more of the controlled devices.

8. The method of Claim 1, wherein said exercising the plurality of controlled devices comprises:

 operating each of said plurality of controlled devices one at a time to isolate the current drawn by each controlled device.

9. The method of Claim 1, wherein said exercising the plurality of controlled devices comprises operating all of said controlled devices simultaneously to measure a maximum current load of the spa.

10. The method of Claim 1, further comprising:
 generating a test report indicative of operability of the spa under test during the test regime.

11. The method of Claim 1, wherein the test report includes listing of test results for each controlled device, and reflects a pass or fail test state.

12. The method of Claim 1, further comprising:
 printing a certificate indicative of a successive test result if the spa under test operates normally during the testing regime.

13. The method of Claim 1, further comprising:
establishing a data communication link between the spa controller and the test computer system;
periodically passing spa status data over the data communication link from the spa controller to the test computer system indicative of a status of the spa and the controlled devices;
passing commands over the data communication link from the test computer system to the spa controller for execution by the spa controller.

14. The method of Claim 1, wherein the spa system further includes a spa control panel for entering spa commands, the method further comprising:
testing the spa control panel.

15. A method for testing a spa system which includes a spa tub for holding water, an electronic controller system which controls the spa system functions, a plurality of controlled devices controlled by the controller system including a pump for recirculating water in the tub, and a heater for heating water, the method comprising:
connecting a test station to the spa under test;
exercising the plurality of controlled devices during a testing regime;
providing power sensor signals to the test station indicative of a magnitude of electrical power drawn by the spa during the testing regime;
using the power sensor signals to generate a test report indicative of a response to the spa under test to the testing regime.

16. The method of Claim 15, wherein connecting the test station to the spa under test comprises:
establishing an electrical signal connection between the electronic controller and the test station to allow commands to be passed from the test station to the electronic controller.

17. The method of Claim 15, further comprising:
filling the spa tub with water before exercising the plurality of controlled devices.

18. The method of Claim 15, wherein said exercising the plurality of controlled devices comprises:

conducting a pump cycle comprising turning the pump on, running the pump for a time, and turning the pump off.

19. The method of Claim 15, wherein said exercising the plurality of controlled devices comprises:

turning the heater on, and subsequently turning the heater off.

20. The method of Claim 15, wherein said exercising the plurality of controlled devices further comprises:

turning a blower fan on, and subsequently turning the fan off.

21. The method of Claim 15, wherein said exercising the plurality of controlled devices further comprises turning a spa light on, and subsequently turning the spa light off.

22. The method of Claim 15, wherein said exercising the plurality of controlled devices comprises:

sending a command or set of commands from a test station to the electronic controller of the spa system to turn on and turn off one or more of the controlled devices.

23. The method of Claim 15, wherein said exercising the plurality of controlled devices comprises:

operating each of said plurality of controlled devices one at a time to isolate the current drawn by each controlled device.

24. The method of Claim 15, wherein said exercising the plurality of controlled devices comprises operating all of said controlled devices simultaneously to measure a maximum current load of the spa.

25. A test system for testing a spa system which includes a spa tub for holding water, an electronic controller system which controls the spa system functions, a plurality of controlled devices controlled by the controller system including a pump for recirculating water in the tub, and a heater for heating water, the test system comprising:

- a current sensor for sensing a spa current drawn by the spa system and providing a sensor signal indicative of the spa current;

- a test computer system;

- a data link between the spa controller system and the test computer system for transmitting spa system data to the test computer system and commands from the test computer system to the spa controller system;

- a set of test instructions for execution by the test computer system for generating a set of commands to the spa controller to exercise the plurality of controlled devices during a testing regime;

- the test computer system adapted to monitor said sensor signals during the testing regime and to determine whether the electrical current drawn by the spa system during the testing regime is within a predetermined specification.

26. The system of Claim 25, wherein said set of test instructions comprises:

- an instruction set for conducting a pump cycle comprising turning the pump on, running the pump for a time, and turning the pump off.

27. The system of Claim 25, wherein said set of test instructions comprises:

- an instruction set for turning the heater on, and subsequently turning the heater off.

28. The system of Claim 25, wherein said set of test instructions comprises: an instruction set for turning a blower fan on, and subsequently turning the fan off.

29. The system of Claim 25, wherein said set of test instructions comprises: an instruction set for turning a spa light on, and subsequently turning the spa light off.

30. The system of Claim 25, wherein said set of test instructions comprises: an instruction set for operating each of said plurality of controlled devices one at a time to isolate the current drawn by each controlled device.

31. The system of Claim 25, wherein said set of test instructions comprises: operating all of said controlled devices simultaneously to cause a maximum current load of the spa.

32. The system of Claim 25, further comprising: a printer for printing a test report indicative of operability of the spa under test during the test regime.

33. The system of Claim 25, wherein said data link comprises an RS-232 serial data link connected to a serial port of the test computer system.

34. The system of Claim 25, wherein said sensor signals are in analog form, and further comprising a data acquisition module connected to the current sensor to convert the sensor signals to digital form for processing by the test computer system.

35. The system of Claim 25, further comprising a set of spa configuration data reflecting the configuration status of the spa under test and nominal current draw specifications for the spa controlled devices.

36. A test system for testing a spa system which includes a spa tub for holding water, an electronic controller system which controls the spa system functions, a plurality of controlled devices controlled by the controller system including a pump for recirculating water in the tub, and a heater for heating water, the test system comprising:

- means for sensing a spa current drawn by the spa system and providing a sensor signal indicative of the spa current;

- a test computer system;

- means for transmitting spa system data to the test computer system and commands from the test computer system to the spa controller system;

- a set of test instructions for execution by the test computer system for generating a set of commands to the spa controller to exercise the plurality of controlled devices during a testing regime;

- the test computer system adapted to monitor said sensor signals during the testing regime and to determine whether the electrical current drawn by the spa system during the testing regime is within a predetermined specification.